8. The subordinate protective and office establishments have continued of the same numerical strength as they were at the close of last year. There were then 57 cases of forest offences to be tried and disposed of; 839 new cases appeared upon the registers during the year; 811 cases affecting 1,928 individuals were tried; convictions obtained in 533 cases concerning 1,250 individuals; and acquittals in 278 cases affecting 678 individuals; and 85 cases remained over at the end of the year.

9. 154 cases of forest offences committed in "Protected Forests" and in proposed "Reserved Forests," provisionally notified under Section 4 of the Forest Act, were disposed of by Assistant Collectors, under Section 43 of the Land Revenue Code, in the Thána Division. Divisional Forest Officers have exercised with freedom and judgment their powers of compounding offences under Section 67 of the Forest Act, and 4,305 cases of compounding have occurred.

10. Fire-conservancy maintained by the vigilance of forest guards and the good-will and co-operation of the population of forest villages has been successful, although the area traversed by fire is larger in some divisions this year than last. In the Thána divisions the improvement in this respect is marked.

11. The financial results of the year have not been so satisfactory as could be wished. The revenue has declined from Rs. 10,37,296 of the previous year to Rs. 9,13,100.

CHAPTER I.

AREA AND BOUNDARIES.

1.—AREA AND BOUNDARIES.

12. The selection of forest land or waste land, the property of Government or over which the Government has proprietary rights, or to the whole or any part of the forest produce of which Government is entitled, in order that such lands might be constituted either "Reserved Forests" or "Protected Forests" according to their circumstances and surrounding conditions, has been continued during the year by a number of special officers, designated "Demarcation and Settlement Officers", appointed by Government for this duty. The changes which have affected the forest areas appear in the following table:—

No.	Division.	Area on 1st April 1886.				Added during the year.				Disforested or excluded by Rectification of Areas.				Area on the 31st March 1887.			
		Reserved.		Protected.		Reserved.		Protected.		Reserved.		Protected.		Reserved.		Protected.	
		Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.	Square Miles.	Acres.
1	North Thána	263	331	300	621	21	209	..	..	..	4	2	252	284	536	298	369
2	South Thána	282	1	353	80	43	665	..	..	..	171	..	30	325	395	353	50
3	East Khándesh	668	76	153	514	..	..	..	..	..	..	49	207	668	76	104	307
4	West Khándesh	1,216	493	194	617	..	348	..	..	1	108	..	..	1,216	93	194	617
5	Násik	1,083	195	..	..	29	24	..	..	1	310	..	..	1,110	549	..	..
6	Ahmednagar	805	88	10	173	54	299	1	58	23	134	..	117	836	253	11	114
7	Poona	711	19	..	..	14	94	..	..	3	92	..	..	722	21	..	..
8	Sátára	641	316	..	17	19	484	..	..	1	400	..	..	659	400	..	17
9	Sholápur	167	306	..	..	66	301	..	..	1	20	..	..	232	587	..	..
10	Surat	969	124	..	..	..	..	..	..	..	..	..	..	969	124	..	..
11	Panch Mahals	208	338	..	..	1	261	118	107	4	329	..	..	295	270	118	107
	Total ..	7,016	367	1,013	102	251	25	119	165	36	288	51	606	7,231	104	1,080	301

13. Of the area reduced during the course of the year from "Reserved Forests" which at the commencement amounted to 7,016 squares miles 367 acres, 17 square miles 520 acres were disforested by notification issued under Section 26 of the Forest Act, and the balance, 18 square miles 408 acres, represents rectifications of errors either discovered in the forest registers or in the figures of the old survey by the revision survey when its operations have been completed. In the same way, of the reductions in the "Protected Forests", 50 square miles 203 acres are due to absolute exclusions of lands from protected conservation, some of the lands have been converted into Reserved Forest, and 1 square mile 403 acres to corrections of mistakes in figures. Of the areas added during the

year, rectification is responsible for 15 square miles 194 acres of "Reserved", while by notifications under Sections 19 and 28 respectively 235 square miles 471 acres have been freshly constituted "Reserved Forests" and 119 square miles 165 acres "Protected Forests."

14. The proportion of the forests finally constituted to the whole area of each Collectorate and the progress made in "Forest Demarcation," which means the selection of areas for forest reservation, is as under :—

No.	Collectorate.	Territorial Area in Square Miles.	Reserved Forests duly constituted in Square Miles.	Percentage of Forest.	Number of Tálukas or Revenue Sub-Divisions.	Number of Tálukas in which Demarcation has been undertaken and sanctioned.	Number of tálukas in which Demarcation remains to be completed.	Number of undemarcated Tálukas.
1	Thána	4,243	610	14·3	10	4	1	5
2	Khándesh	9,944	1,884	18·9	16	8	3	5
3	Násik	5,940	1,111	18·7	12	9	2	1
4	Ahmednagar ...	6,666	836	12·5	11	7	4	...
5	Poona	5,348	722	13·5	8	4	4	...
6	Sátára	4,988	660	13·2	11	6	5	...
7	Sholápur	4,521	233	5·1	7	6	1	...
8	Surat	1,662	969	58·3	8	1	3	4
9	Panch Maháls ...	1,613	206	12·7	3	2	1	...
		44,925	7,231	16·09	86	47	24	15

15. In the tálukás where the demarcation has been undertaken and sanctioned by Government there still remain lands to be acquired in order to complete the approved demarcation schemes; these lands are held for cultivation and other purposes by survey occupants, but negotiations are being carried on for their obtainment by giving other available waste lands in exchange for them, or by payment of compensation for surrender of the rights of occupancy. During the year of the report, 5,432 acres were obtained on payment, and Rs. 17,086 were expended for the purpose.

16. Of waste and forest lands selected for reservation, and of the lands which have been acquired by exchange or by purchase during the year, considerable areas, which had been provisionally declared as proposed for forests by notifications under Sections 4 and 28 of the Forest Act, were still undergoing settlement inquiries at the close of the year, and had not been finally constituted "Reserved" and "Protected Forest." The following table gives a distribution of these unsettled forest lands :—

No.	Collectorate.	Provisionally notified.						Remarks.
		Of Reserved Forests under Section 4.		Of Protected Forests under Section 28.		Total.		
		S. Miles.	Acres.	S. Miles	Acres.	S. Miles	Acres.	
1	Thána	2	227	...	...	2	227	
2	Khándesh	307	274	...	...	307	274	
3	Násik	1	323	...	...	1	323	
4	Ahmednagar ...	6	432	1	58	7	490	
5	Poona	22	326	...	...	22	326	
6	Sátara	...	581	...	...	...	581	
7	Sholápur	43	513	...	...	43	513	
8	Surat	...	...	...	...	...	...	
9	Panch Maháls ...	15	110	118	107	125	217	
		400	226	119	165	519	391	

17. Whether the sanctioned demarcation schemes of the several tálukás provide sufficiently for the storage of the rainfall in the country—

(*a*) for the maintenance of a water-supply in springs, rivers, tanks and for the natural irrigation of the lands upon the lower levels of the country, which being occupied for purposes of cultivation ought to be commanded by forests located up on the higher levels, which would then serve as natural reservoirs ;

(*b*) for the safety of roads, bridges, railways and other lines of communications, as well as of cultivation in the champaign against destructive floods ;

(*c*) for the preservation of the beds and channels of rivers and streams of tidal and navigable creeks and estuaries, the beds of lakes, artificial reservoirs, tanks, the foreshores and beds of harbours and bays, against the deposit and accumulation of silt :

(*d*) for the retention of the soil upon ridges and slopes and in the valleys of hilly tracts ;

(*e*) for the prevention of the formation of torrents and ravines ;

is by no means certain. The selection of forest areas, although made with care by the very able and intelligent Assistant Collectors who have been specially employed upon this work, and have performed it laboriously and conscientiously, has been restricted by circumstances beyond their control, such as hill slopes being in possession of private individuals for cultivation or other uses than of forest conservancy, and the admitted demand for land either for purpose of cultivation or for purposes of grazing for sheep, goats and other cattle. The drainage basin of Bombay harbour is to be found in the Thána and Kolába Collectorates, and it may be taken roughly at 1,500 square miles. The rainfall over this basin averages at least 100 inches in the twelve months ; the greater portion of this rain, however, falls within a brief period of a few weeks. It would require a water tower of great dimensions having its four sides one mile long each way, and of the height of 2½ miles to hold this enormous volume of water. The erosive power of such a heavy concentrated rainfall precipitated from a great height must necessarily be of giant force. If then the steep slopes within the catchment whereupon this water is poured are not completely protected by superior vegetation to break the force of the falling rain and to let it down gently on to the ground, to retain the greater portion of it, and to bind the surface soil to the sides of the hills, the removal of earth from off their surfaces with its eventual deposition upon the lowest level, in this case in the harbour of Bombay, is the certain effect of a present cause. One inch depth of soil taken off an acre of surface represents 3,600 cubic feet of earth, and one inch off 1,500 square miles of surface no less than 3,45,60,00,000 cubic feet ; fortunately of the catchment basin made up very largely of hill and mountain slopes, a large proportion is still covered with trees, being included within "Reserved Forests". Considerable tracts, however, of it being steep sloping ground are not within reservation, are under no protection whatever, and are exposed fully to the motive power of the rainfall, and the result may possibly be read in a letter which Mr. Russell Aitken, some time Engineer to the Port Trust of Bombay, addressed to "The Times" nswspaper of London last year, where the following sentence appears : "There was deep water in Bombay Harbour only where there was a rapid current to keep the channel open." It has also been reported that large sums of money have been expended in the past few years in dredging silt out of the docks and harbour of Bombay. With the ever present examples of the silted up condition of the tidal channels of inland navigation of the Ratnágiri Collectorate, owing to the destruction of the forests upon their catchments, and of the Gulf of Cambay with the estuary of the Tápti River, the importance of extending forest reservation downwards to at least the base contour line of all the hilly lands, and of maintaining in the highest state of efficiency a complete covering of forest upon the slopes within the drainage basin of Bombay harbour, may not possibly be denied. The cost of obtaining occupied hill lands within the catchment basin would not probably exceed the amount spent during three or four years in dredging the harbour and the docks of Bombay.

18. In the Deccan, the country above and east of the Western Ghâts, forest protection is very partial and defective; and the demarcation schemes are not capable, at present, of affording protection against floods. In the month of December last a rainfall lasting 12 hours over the country of the head-waters system of the Sina River created a flood which interrupted traffic between the city of Ahmednagar and the railway line 4 miles off, washed away cattle, farm implements and crops, and did serious damage to house and other property. The storage of the rainfall of the Deccan in place of its immediate return to the sea in the interests of agriculture, and as an insurance against famine, is one of the strongest arguments for the expansion of forest reservation so as to include all water-sheds, sources of streams and rivers, mountains and hills, and such other portions of the country as are adapted by nature to remain covered with forests, and which cannot, at the best, if brought under cultivation, produce more than two or three meagre crops, and then become desolate wastes.

19. At the commencement of the official year, Messrs. Lawrence and Atkins, of the Civil Service, were engaged in forest demarcation and settlement in the Thána Collectorate; on the 9th April the former proceeded on leave and eventually to England, while the latter on the 19th July relinquished charge of his own and of Mr. Lawrence's office, which he had taken over, in order to join his new appointment of Under Secretary to Government in the Revenue Department. From the 19th July to the 13th September 1886 the District Deputy Collector was in charge of the demarcation and settlement offices, and was relieved on the 14th September by Mr. W. S. Owen, Assistant Superintendent Revenue Survey Department, who was appointed Forest Settlement and Demarcation Officer of Thána, and who continued in office throughout the remainder of the year. Orders of Government have been passed—

(*a*) in their Resolution No. 7001, dated 2nd October 1886, on the supplementary report upon the forest settlement and demarcation of the Mokháda Peta;

(*b*) in their Resolution No. 8900, dated 20th December 1886, on the supplementary reports of the Kalyán Táluka;

(*c*) in their Resolution No. 7022, dated 4th October 1886, on the allotment of the hill lands in the Karjat Táluka for varkas cultivation.

20. Demarcation schemes for the Sháhápur and Murbád tálukás within the catchment basin of Bombay harbour, prepared and submitted by Mr. Atkins, C.S., were met with considerable objections on the part of all the forest officers consulted, on account of the proposed exclusion of hill slopes containing valuable teak and other timber, the property of Government, and the insufficiency of the projects for protecting all the drainage slopes in the two tálukás. No orders of Government have been passed upon these proposals.

21. Mr. Owen has completed the settlement inquiries in the Bassein, Bhiwndi, Kalyán, and Sálsette tálukás, which remained to be done; has acquired by purchase, for Rs. 267-15-6, 4 acres and $2\frac{3}{4}$ gunthás of occupied lands inside the forests; has commuted the right of certain Thákurs to live in a hamlet inside the Shirgaon forest of the Kalyán Táluka by giving them another site in another village outside of forest limits with timber for building new houses; has demarcated the forests of Sakwar and Bhatane in the Bassein Táluka; has inquired into and arranged for the location of cultivation areas and hamlets for Thákurs upon the slopes of the Mátherán hill range and other hills within the Karjat Táluka; has prepared and submitted to Government a list of forest and waste lands to be included in the forest demarcation scheme of the Váda Táluka—this list has been notified subsequently under Section 4 of the Forest Act; and has prepared and supplied the local Revenue officers with complete forest registers of the Sálsette, Bhiwndi, and Kalyán tálukás. Thus it will be seen that Mr. Owen has been very actively and industriously employed.

22. In the Collectorate of Khándesh, Mr. Lamb, C.S., was still Forest Settlement and Demarcation Officer at the opening of the year: on the 12th July he proceeded on privilege leave, and returned on the 7th September 1886, the acting Collector of the district holding charge of his office during his absence;

on the 24th February 1887 Mr. Lamb finally relinquished charge, on transference to Burmah, to Mr. E. Morrieson, C.S., who directed the forest settlement and demarcation work in addition to the revenue and magisterial duties of his own appointment as Assistant Collector up to the end of the year. Mr. Lamb prepared and submitted proposals regarding the location of the Bhil settlements and the demarcation upon the ground of the outer boundary line of the Fatepur-Amoda Reserved Forest in the Sháháda Táluka, which were approved and sanctioned by Government. He submitted demarcation schemes of the Amalner, Erandol, Jalgaon, Páchora, and Jámner tálukás : in respect of the three first-named, final orders of Government were passed in Resolutions Nos. 7105 of the 6th, 7533 and 7534 of the 25th October 1886 ; the Páchora scheme was returned for revision, but no orders had been issued regarding Jámner before the end of the year ; he selected lands upon the banks of rivers in the Bhusával Táluka for being converted into plantations for the protection of the banks, and at the same time to form fuel and fodder reserves such as are the valuable bábul reserves in other portions of the Deccan, in accordance with orders of Government conveyed in Resolution No. 7592 of 1885, but Government in their Resolution No. 3059 of 17th May 1887 have directed that the Commissioner should set apart the selected reserves under Section 38 of the Land Revenue Code if arrangement can be made for their protection in the Revenue Department, otherwise they should be left alone, as it would not be possible to increase forest establishment for their protection ; he completed the settlement of the sanctioned Jalgaon Táluka demarcation scheme ; and he commenced and had made considerable progress in the demarcation of the Bhil settlements inside the Taloda Reserved Forest, and the determination of the outer boundaries of this reserve, when his exceedingly useful career as a Demarcation and Settlement Officer was cut short by his transfer to Burmah. Mr. Lamb applied himself to demarcation and settlement of the Khándesh forests with great vigour, ability and interest, and it is much to be regretted that circumstances have prevented the work being brought to a successful termination by him, as his knowledge of the country, of the people, and of the requirements of forest conservancy gave special value to his service as a Forest Demarcation Officer. Up to the end of the year the out-door work had been finished, final sanction having been accorded, in 9 tálukás, *viz.*, Sávda, Chopda, Shirpur, Jalgaon, Erandol, Amalner, and Sháháda. Schemes had been submitted for two more, *viz.* Páchora and Jámner, and the scheme for Bhusával was approaching completion, leaving the six tálukás of Taloda, Nandurbár, Pimpalner, Chálisgaon, Dhulia, and Sindkheda to be attended to.

23. Mr. Frost, C.S., Special Officer for Demarcation and Settlement in the Násik Collectorate, was employed at the opening of the year in the Baragaon Dángs, below the Western Ghats. in selecting forest areas, with the result that 16,436 acres were demarcated, and the proposals in respect of them were submitted to Government in August 1886, but final orders had not issued before the 31st March 1887. Grazing schemes have been prepared by Mr. Frost for the Kalvan, Násik, Báglán, Sinnar, Niphád, and Dindori tálukás ; these schemes show the particular lands with their acreage of the forests of every village in the táluka which the Forest Settlement Officer considers should be opened to, and closed against, the free pasturage of all village cattle. The forest settlement and demarcation of the Násik, Báglán, and Sinnar tálukás were likewise revised and completed by Mr. Frost during the year, and the revision of the same work was commenced in the Dindori Táluka. Mr. Evelyn Gray, C.S., who was also on special deputation in the Násik Collectorate for determining and constituting forest reservations, completed during the year the demarcation scheme of the Peint Táluka below the Western Ghats, and then rejoined his revenue office in the Thána Collectorate. The only work remaining to be done in the Násik Collectorate, at the close of the year, was the completion of the revision of the demarcation and settlement of the Dindori Táluka and of the Igátpuri Táluka —the former partially done, and the latter not yet commenced. 648$\frac{11}{20}$ acres of occupied lands with the forest boundaries in the Peint and Dindori tálukás were purchased for Rs. 660-15-0. Several errors aggregating 1,379 acres, discovered in the figures given last year of the forests of the Násik Division, have been rectified now. Both Mr. Frost and Mr. Gray have performed excellent work of a lasting character in the Násik Collectorate.

24. The Ahmednagar Collectorate has enjoyed the continued services of Mr. A. F. Woodburn, C.S., as Special Forest Demarcation and Settlement Officer. Reports have been submitted containing projects of reservations respecting all the tálukás, but the final orders of Government have to be issued regarding the Sangamner, Akola, Kopargaon, and Nevása tálukás. Some of these schemes were returned for reconsideration, Government being of opinion that Mr. Woodburn's proposals for the Sangamner and Nevása tálukás included in forest reservation more lands than it was desirable to alienate for the purpose. 1,249 acres of lands inside the demarcation schemes of the whole district have been acquired during the year by payment of compensation amounting to Rs. 4,599-2-10, and 233 3/16 acres have also been acquired by exchanges. Rectification of mistakes discovered in the figures of forest registers, and the transfer of some forest lands to the adjoining Collectorate of Poona, have affected the forest acreage returns. Mr. Woodburn has successfully completed the forest selections and forest settlements of this large Collectorate with patience, great industry, tact and management, and has thereby performed work of the highest value to the State in re-organizing the natural reservoirs of the country, and establishing them free from the burden of all and any private rights, save of the right of way. That the demarcation schemes are sufficiently extensive, will possibly be disputed by forest officers, but local circumstances will not permit larger reservations at present.

25. The demarcation work of the Poona Collectorate has been practically completed; the only portion that remains to be demarcated is the forest block round the celebrated hill-fort of Singhar, near Poona, and the orders of Government upon the demarcation scheme of the Haveli Táluka remain to be issued, the report was returned to the Demarcation Officer for reconstruction and re-submission. The office of forest demarcation and settlement officer has been held by the following gentlemen during the year :—

Mr. P. C. Snow, C.S. ...	In charge of whole district	...	From 1st April to 26th April 1887.
	In charge of western division	...	From 29th July to 3rd November 1886.
	For the whole district ...	...	From 4th November 1886 to 16th March 1887.
Mr. E. C. Morrieson, C.S.	In charge of whole district	...	From 27th April to 28th July 1886.
	In charge of the eastern division	.	From 29th July to 3rd November 1886.
Mr. W. P. Symonds, C.S.	In charge of the whole division	...	From 17th March to end of year.

Owing to the transfer of certain villages of the Párner Táluka of the Ahmednagar Collectorate to the Sirúr Táluka of Poona, 1,708 acres 38 gunthás of Reserved Forest have likewise been transferred from the former to the latter, 2,054 acres 27½ gunthás of occupied lands inside the demarcation schemes have been purchased for Rs. 6,045 from time to time during the course of the year.

26. Several officers have been in charge of the Forest Demarcation and Settlement Office of the Sátára Collectorate at different times of year of this report, as under :—

Mr. B. G. Sáthé, Deputy Collector—From 1st April to 13th June 1886.

Mr. H. R. Cooke, C.S., Assistant Collector—From 14th June to 1st August 1886.

Mr. Rajaram Khanderao Vaidya, Deputy Collector—From 2nd August 1886 to 31st March 1887.

But the demarcation of all the forest lands had been practically completed the year before last by Mr. Muir-Mackenzie, C.S. Settlement inquiries respecting the forests of 40 villages have been completed by Mr. Rajaram Khanderao Vaidya during the year. The orders of Government upon the settlement and demarcation reports of the five tálukás of Tásgaon, Khánápur, Khatáv, Pátan, and Válva remain to be issued; the reports of the two first-named are with Government, the Khatáv and Pátan projects are with the Commissioner, and the

report of Válva has not yet left the Divisional Forest Office of Sátára. Forest registers of all forest lands finally constituted and sanctioned have been written up. Rs. 1,326-6-10 have been paid in compensation for land and rights, 426 acres 36 gunthás having been acquired. Two cases of compensation in the Wái Táluka under the Land Acquisition Act were appealed against to the higher Court, and were decided by the District Judge: in one case the decision of the Forest Settlement Officer being upheld, and in the other larger amounts being awarded than had been assessed in the first instance. The names of Messrs. Spence, Shewan, and Muir-Mackenzie, all of the Civil Service, will ever be associated with the demarcations of the Sátára forests, where the treatment of two important questions affect the value of their work, *viz.*

(1). Kumri cultivation upon the Ghátmátha, *i. e.* cultivation by the axe and fire of inferior grains upon the ashes of destroyed forests at the crest of the Western Ghats, where the head-waters system of all the rivers are located.

(2). The cutting of thorns by villagers upon the denuded hills included in the reserves in the eastern portion of the district, where reboisement is the chief work of forest conservancy, and the presence of thorny scrub is of vital importance to its success, in order to bind the little soil that remains to the hill slopes, to create new soil, to provide cover and shade, to nurse seedlings, and to break the dropping force of the rain, and to check its surface off flow.

27. Mr. Silcock, C.S, held charge of the forest settlement and demarcation offices of the Sholápur Collectorate in addition to the revenue charges as Assistant Collector of the Mádha and Karmála tálukás, and the following work has been performed during the year:—

(1) *Sholápur Táluka.*—Settlement inquiries in respect of 4,675¾ acres of provisionally notified reserved forest have been completed, of which 4,242$\frac{7}{10}$ acres were finally constituted under Section 19 of the Forest Act, and the balance was excluded. This work was approved and sanctioned by Government Resolution No. 6856 of the 27th September 1886. 881$\frac{7}{10}$ acres of occupied lands have been acquired by purchase and exchange, leaving 2,939½½ acres still to be acquired.

(2) *Bársi Táluka.*—41 acres have been settled and constituted by notification under Section 19.

(3) *Mádha Táluka.*—361$\frac{7}{20}$ acres have been settled and constituted and 35$\frac{37}{40}$ acres have been purchased.

(4) *Karmála Táluka.*—Settlement inquiries were progressing. 1,122$\frac{39}{40}$ acres of occupied lands inside demarcation schemes have been purchased, leaving 2,117$\frac{7}{10}$ acres to be acquired.

(5) *Pandharpur Táluka.*—1,043$\frac{7}{20}$ acres have been settled and declared Reserved Forests, and 386$\frac{29}{40}$ acres of occupied lands have been purchased, leaving only 309$\frac{3}{4}$ acres to be acquired.

(6) *Sángola Táluka.*—Demarcation scheme was before Government. 850$\frac{7}{40}$ acres of occupied lands were purchased.

(7) *Málsiras Taluka.*—568¼ acres of Reserved Forests were settled.

28. Forest settlement inquiries were completed during the year in the Bulsár, Chikhli, and Párdi tálukás of the Surat Collectorate in respect of all the lands notified under Sections 4 and 34 of the Forest Act, and were commenced in the Mándvi Táluka by Mr. Umedrám Ranchordás, District Deputy Collector, who performed this work in addition to his revenue and magisterial duties.

29. Mr. W.T. Morison, C.S., the energetic Forest Demarcation and Settlement Officer of the Panch Mahás, was transferred to Burmah, and gave over charge of his duties to Mr. G. M. Urquhart, Assistant Collector, on the 24th February 1887; but before his departure he had prepared and submitted demarcation schemes for the Godhra, Hálol, Jhálod, and Dohad tálukás, thus completing the forest demarcation of the whole district. The forest settlement report of the Kálol Táluka, the demarcation project of which had been satisfactorily arranged by Mr. Shewan, C.S., last year, was before Government. The net results of

the orders passed upon the several demarcation schemes has been to disforest entirely 2,889 acres less 801 rectification of area of Reserved Forest, to create 75,626 acres of "Protected Forest" under Chapter III of the Forest Act from forest areas more or less richly covered with timber, which had previously been notified as proposed Reserved Forests under Section 4 of the said Act, and to notify as proposed "Reserved Forest" 2,256 acres of waste land.

Jhálod Táluka.—26,902$\frac{2}{5}$ acres, equal to 15 per cent. of the táluka, are included in the demarcation scheme, which was sanctioned by Government Resolution No. 8095 of the 16th November 1886.

Dohad Táluka.—46,519$\frac{2}{4}\frac{1}{0}$ acres, equal to 23 per cent. of the táluka, are included in the demarcation project, which was sanctioned in Government Resolution No. 848 of the 5th February 1887.

And in their Resolution No. 910, of the 9th February 1887, Government directed that these forests should be "Protected" and not "Reserved," because, in the opinion of Government, strict conservancy is difficult in these localities, and a variety of privileges have been granted in the forests the exercise of which would make them Reserved only in name. The two tálukás are comparatively high tableland, and contain the first sources of streams; the timber is chiefly teak: the forests growing on low hills and broken ground are fairly dense in places, and are generally improvable, many kinds of trees being represented. There is a local demand for firewood especially, and the extension of the railway line from Godhra through the Dohad Táluka to Rutlam will possibly create a further demand for export. The waste area outside the forest boundaries is considerable. For these reasons it may be found advisable, at no distant date, to bring the forests of Jhálod and Dohad under better treatment, and to convert them into "Reserved Forests."

Godhra Táluka.—Here the Reserved Forests gazetted under Section 34 of the Forest Act comprised 86,647$\frac{3}{8}$ acres and the Protected Forests 17,183$\frac{1}{2}\frac{1}{0}$ acres. Subsequently in 1879, 1881 and 1884 additional 3,473$\frac{1}{4}$ acres were notified as proposed "Reserved" under Section 4 of the Forest Act, and the original demarcation scheme prepared by Mr. Morison, the Special Assistant Collector, and generally approved by the Forest Department, provided for a "Reserved Forest" area of 96,033$\frac{3}{4}\frac{1}{0}$ acres with no "Protected" forests. Of the former, which has been gazetted under Section 34 of the Forest Act, 2,875$\frac{1}{2}\frac{1}{0}$ acres and of the latter, 12,858$\frac{7}{2}\frac{}{0}$ acres were proposed to be absolutely disforested. 4,325$\frac{1}{2}$ acres of the forest lands in "Protected Forests" were proposed for conversion into "Reserved Forests." 3,462$\frac{2}{4}\frac{7}{0}$ acres of lands provisionally notified under Section 4 were likewise proposed to be finally constituted "Reserved Forest". 4,097$\frac{3}{4}\frac{9}{0}$ acres of available waste and 376$\frac{1}{1}\frac{}{0}$ acres of occupied were also to be added to the "Reserved Forest." The net result of the demarcation scheme, which gave compact forest blocks in the most important teak-producing tract of the Panch Mahals, was the decrease of the then existing forest area by 11,270$\frac{2}{4}\frac{3}{0}$ acres. The forest officers objected to the exclusion of some of the better wooded tracts of "Protected Forest", which adjoin the old "Reserved Forests." Government, however, were of opinion that this demarcation scheme placed too much land in forest reservation, and did not provide sufficiently for a possible expansion of cultivation in the immediate future; and they declined to sanction it, and directed the special officer to revise it in consultation with the Land Revenue officers. A revised scheme was accordingly submitted; and finally Government in their Resolution No. 1318, dated 2nd March 1887, Revenue Department, sanctioned for the Godhra Táluka a "Reserved Forest" area of 72,446 acres and a Protected Forest area of 19,088. The net results of this sanctioned scheme are that the gazetted and notified "Reserved Forest" areas are to be decreased by 17,944 acres and the "Protected Forests", on the other hand, to be increased by 1,905 acres, the total forest area being decreased by 16,039 acres, and 16,473 acres of timbered lands more or less covered with teak trees formerly gazetted "Reserved Forest" become "Protected Forests." The boundaries of the forest reservations are made very irregular in places by these arrangements, which break into solid compact blocks.

30. No demarcation has been undertaken in foreign States by forest officers of the Northern Circle during the year, but orders have been passed by Govern-

ment upon the report of the Committee that had been specially appointed for the work regarding the demarcation of the catchment basins of the Fife and Bhatghar Lakes with the head-water systems of the Nira and Mutha Canals, to afford protection against the deposition of silt in the beds of the lakes and canals, with the consequent deterioration and possibly the ultimate destruction of these very costly and highly valuable projects, not only in the interests of agriculture, but also upon sanitary grounds, for the Fife Lake and Mutha Canal supply drinking water to the city of Poona and to the cantonments and civil stations of Poona and Kirkee. Mention is made, in paragraphs 31 to 33 of the administration report of last year, of the proceedings of the Committee of which Mr. Joshua King of the Civil Service, Collector and Political Agent of Sátára, was President, and two Executive Engineers of the Irrigation Department, Messrs. Burke, C.E., and Clifton, C. E., with the Conservator of Forests were members. The Commissioner, C. D., condemned the scheme as being, in his opinion, too sweeping, and impolitic; and Government in their Resolution No. 246 of the 12th January 1887 appointed Mr. Báláji Gangádhar Sáthé, Deputy Collector, on special duty to report to Government what scheme of forest demarcation and settlement can be carried out, and at what cost. The conditions to prevent-silt accruing being taken into account, but should not be the only object, the interests of the rayats and the rights of the Pant of Bhor being considered also—kumri cultivation being put a stop to where possible. Mr. Sáthé had submitted no report before the close of the year.

2.—FOREST BOUNDARIES.

31. The work of "Demarcation" as technically used in the Forest Department Code, meaning the defining of the boundaries of forest reservations upon the ground, has been pushed forward with vigour in several districts, for it is of great importance that forest boundaries and forest boundary-marks should be recognized and recognizable as such when and where they may be seen. Instructions regarding the construction and location of special forest boundary-marks have been issued to all Divisional Forest Officers during the year, and the construction of the special marks has been regulated by the specification of them given. These instructions provide—

Specification of Forest Boundary-Marks.

I.—In hilly country and also in the plains, where stones are to be found in considerable quantity, there shall be two classes of forest boundary-marks of the following specification :—

Shape.—A truncated cone.

Description.—Built of loose stones upon an excavated foundation, so that the lowest tier of stones shall be held in position and not pushed out by the weight of the superstructure, especially when the ground becomes wet and slippery. The interstices between the large stones composing the cairn are to be filled in with small stones, and the outer stones are to be wedged with stone chips. A shaped stone showing a height of at least 15 inches is to be fixed firmly on the top of the cairn in the centre.

Foundation.—Six (6) inches to be dug out.

Dimensions.—*First class mark* to have a base of 7 feet diameter, to be 5 feet high, and the top to be 4 feet diameter.

Second class mark to be on a base of 4 feet diameter, to be 3½ feet high, and to be 2½ feet in diameter on top.

Indicator.— A cut stone showing at least 15 inches clear of the cairn to be embedded firmly in the centre on top; the stone to be large enough; a serial number to be cut on it if required.

Colour-wash.—The stone to be colour-washed red annually, and lines of the same colour are to appear on the top of the cairn radiating from the centre stone, to show the direction of the boundary lines.

N.B.—Bámbus, or Euphorbia verrifolia, (Sabri), to be planted in clumps round each boundary-mark.

Position.—A 1st class boundary-mark to occupy main points and angles, such as where the boundary of a forest block, forest compartment, or village may intersect the forest boundary, and where the latter may take an abrupt turn.

A 2nd class boundary-mark to occupy intermediate points.

N.B.—(1).—The boundary-marks are to be placed at visible distances one from the other, so that from any mark its neighbouring one on both sides can be seen clearly.